TI9000en	Technical Information	thermokon asia pacific
RRF3- Series (T)	Room Fan- Coil Thermostat for 2- Pipe Systems	

The RRF3- Series is designed to control the temperature in rooms or areas.

The modern designed flush mounted fan coil room thermostat is used for individual control of temperature in commercial and residential buildings.

It is tailored for two-pipe fan coil units:

Heating, Cooling or Heating/Cooling control applications.

The Fan Speed Control Outputs are ON/OFF, the Control Valve output is ON- OFF or 0...10V.

USE

Stand-Alone Thermostat used in residential or commercial building

Controlling the temperature with Fan-Coil Units in rooms and areas

Used in all common Fan Coil Application 2- pipe systems

Used in Commercial and Residential Buildings

Features

Flush Mounting with ø55mm

Full LCD display with 6 touch buttons

Manual / Automatic 3- speed Fan Control

Manual / Automatic Heating- Cooling change over

Common or daily time scheduler with 4- time frames

Comfort / Economy switch

Control Valve output ON-OFF or 0…10V

Product Range

Order Code	Various			Outputs		Functionality					User Interfaces					
	Frame Colour	Flush Mounted	Power Supply	3- ON/OFF Fan Speed	Control Output	Control Application	Change Over	Fan Speed Control	Time Scheduler	Comfort / Economy Mode	User interface					
RRF3.AB	White	ø55mm	AC230V	Q1-Q2-Q3 ; 230V ON/OFF	Qv ; 230V ON/OFF	Heating, Cooling or Heating/Cooling controls	Change/Over Sensor or Manual	Manual or Automatic Fan Speed Controls	Common or daily time scheduler with 4 time frames	External Comfort / Economy switch	Full LCD display with 6 touch buttons	Heating/Cooling touch button	Time / Date touch button	Comfort / Economy / Off touch button	Fan Operation touch button	increase / decrease touch button
RRF3.BB	Black															
RRF3.AG	White				Yv ; 0...10V											
RRF3.BG	Black															

Sensor Specification	Room Temperature Sensor	Sensor	Passive
		Accuracy	± 0.3K @ 25ºC
		Measuring Range	0…50°C
	Change Over Sensor	Sensor	Passive
		Accuracy	± 0.3K @ 25ºC NTC10k
		Measuring Range	0…50°C
Setpoint	Setpoints	Comfort heating Setpoint	20°C (1…50°C)
		Comfort cooling Setpoint	22°C (1…50°C)
		Economy heating Setpoint	16°C (1…50°C)
		Economy cooling Setpoint	28°C (1…50°C)
		OFF mode	only frost protection setpoint (6ºC) in Heating Mode active
		Change Over heating	28°C (27…50°C)
		Change Over Cooling	16°C (10…25°C)
Technical Information	Outputs	Fan Speed Q1 / Q2 / Q3 Relays	
		Relays rated	AC 230V 5A
		Minimum OFF-time	3 sec. (1…120sec)
		Minimum ON-time	3 sec. (1…120sec)
		Control Output Qv	
		Relay Output	AC 230V 5A
		Switching differential heating	2 K (0.5…4K)
		Switching differential cooling	1 K (0.5…4K)
		Control Output Yv	
		Output	DC 0…10V, max ±1 mA
		P-band Heating	2 K (0.5…4K)
		P-band Cooling	1 K (0.5…4K)
		Presence / Window Switch	
		Relays rated	AC 230V 5A
		Delay time	5s
	User Interfaces	Touchscreen	
		Control Mode Button	Heating/Cooling Mode selection
		Date & Time Button	Actual Date and Time settings
		Fan Speed Selection Button	1-2-3-Automatic Fan settings
		Increase Button	Temperature (+) settings
		Decrease Button	Temperature (-) settings
		Comfort / Economy / OFF	Comfort / Economy / OFF Mode selection
	Electrical Information	Power Supply	AC 105…265V
		Frequency	50 / 60 Hz at AC 24V
		Terminal Clamp	Screw terminal, max. 1.5mm²
		Power Consumption	0.9VA at AC 265V
	Mechanical Information	Cable Connection	Backside of the controller
		Sensing Element Position	Inside the housing, top of the housing
	Colour and Materials	Housing Cover	ABS Plastic (Black or White)
		Housing Bottom	ABS- Plastic (Black or Whi
		Display	Touch-LCD with LED-Illumination
			scratch resistant acrylic class
	Environmental Conditions	Operation Temperature	0ºC...+50ºC
		Operation Humidity	<85 % r.h., no condensation
		Transport Temperature	-35ºC...+70ºC
		Transport Humidity	< 90% r.h.
		Storage Temperature	-10ºC...+70ºC
		Storage Humidity	< 85% r.h., no condensation
	Norms and Directives	IP- Rating	IP20 to IEC60529
		Safety Class	III to EN 60 730
		Product Standard 1	Automatic Electric. Controls for household and similar use
		Product Standard 2	2009/EN 60 730-1
		CE Conformities to	2004/108/EG Electromagnetic Compatibility EMV
		CE Electromagnetic Compatibility Emitted Interference	2000/EN60730-1 Emitted Interference
		CE Electromagnetic Compatibility Interference resistance	2000/EN60730-1 Interference Resistance
		RoHS Compatibility	Rohs 3 EU2015/863
		Operation Climatic Condition	IEC 60 721-3-3
		Operation Mechanical Condition	IEC 60 721-3-2 to class2M2
		Transport to Climatic Condition	IEC 60 721-3-2
		Transport Mechanical Condition	IEC 60 721-3-2 to class2M2
		Storage Climatic Condition	IEC 60 721-3-1
		Storage Mechanical Condition	IEC 60 721-3-1 to class2M2
Miscellaneous	Accessories	Accessory, not included	TPS2.CV, Change- Over sensor
	Shipping & Handling	Minimum Order	1 box with 1 piece
		Product Dimension (L x W x H) / ~Weight	86mm x 86mm x 45mm
		Transport and Storage dimension (L x W x H) / ~Weight	93mm x 93mm x 60mm / 160gr
	Order Notes	Packaging	Rigid Cardboards Packaging
		Order Code	See Product Range, Page 1, e.g. RRF3.AB

Commissioning Screens

Entering the Commissioning Screen:

Press ⚙ **for approximately 5sec until the commissioning screen appears.**

Changing of the Commissioning Parameters

1 Press ⚙ until the desired Parameter number appears
2 Press ▲ or ▼ until the desired value appears
3 Press ⚙ to confirm the selected value

the program goes to the next Parameter until all parameters set

At the end of the parameter list, the Standard Screen will appear

Press 🌀 *at any time of the setting process to leave the Commissioning screen*

Entering the Date and Time

Press 🕒 **shortly until the Day Icon flashes**

Changing of the Date / Time

1 Press ▲ or ▼ until the desired day appears
2 Press 🕒 to confirm the selection
3 Press ▲ or ▼ until the desired hour appears
4 Press 🕒 to confirm the selection
5 Press ▲ or ▼ until the desired minute appears
6 Press 🕒 to confirm the selection

When finished all the programming, the Standard Screen will appear.

Entering the Time Scheduler Screen, Common Day Schedule

Press 🕒 **for approximately 5 sec until the** ON **and the a Hour flashes**

Changing of the Time Schedules

1 Press ▲ or ▼ until the desired starting hour for 1 schedule appears
2 Press 🕒 to confirm the selection
3 Press ▲ or ▼ until the desired starting minute for 1 schedule appears
4 Press 🕒 to confirm the selection
5 Press ▲ or ▼ to select ☀ or ☾ mode for this time schedule
6 Press* ▲ or ▼ to select desired ☼ temperature for this time schedule
7 Press* ▲ or ▼ to select desired ♨ temperature for this time schedule

*if Thermostat is configurated as heating or only cooling application, only the heating or cooling temperature will appear

Continue until the last time schedule 4 is programmed. When finished all the programming, the Standard Screen will appear.

Entering the Time Scheduler Screen, 7 Day Schedule

Press 🕒 **for approximately 2 sec until the Day Icon flashes, the** ON **and then** 1 **time schedule icons is appearing**

Changing of the Time Schedules

1 Press ▲ or ▼ until the desired day appears
2 Press 🕒 to confirm the desired day
3 Press ▲ or ▼ until the desired starting hour for 1 schedule appears
4 Press 🕒 to confirm the selection
5 Press ▲ or ▼ until the desired starting minute for 1 schedule appears
6 Press 🕒 to confirm the selection
7 Press ▲ or ▼ to select ☀ or ☾ mode for this time schedule
8 Press ▲ or ▼ to select desired ☼ temperature for this time schedule
9 Press ▲ or ▼ to select desired ♨ temperature for this time schedule

*if Thermostat is configurated as heating or only cooling application, only the heating or cooling temperature will appear

Continue until the last time schedule 4 is programmed. Continue to program the next days as outlined above. When finished all the programming, the Standard Screen will appears.

Default Settings for the Time schedule

Heating / Cooling Application

Schedule 1	Schedule 2	Schedule 3	Schedule 4
Starting Time 00:00	Starting Time 07:00	Starting Time 18:00	Starting Time 20:00
Control Mode ☾	Control Mode ☀	Control Mode ☾	Control Mode ☾
Setpoint ☼ 28°C	Setpoint ☼ 22°	Setpoint ☼ 28°C	Setpoint ☼ 28°C
Setpoint ♨ 16°C	Setpoint ♨ 20°	Setpoint ♨ 16°C	Setpoint ♨ 16°C

Only Cooling Application

Schedule 1	Schedule 2	Schedule 3	Schedule 4
Starting Time 00:00	Starting Time 07:00	Starting Time 18:00	Starting Time 20:00
Control Mode ☾	Control Mode ☀	Control Mode ☾	Control Mode ☾
Setpoint ☼ 28°C	Setpoint ☼ 22°	Setpoint ☼ 28°C	Setpoint ☼ 28°C

Only Heating Application

Schedule 1	Schedule 2	Schedule 3	Schedule 4
Starting Time 00:00	Starting Time 07:00	Starting Time 18:00	Starting Time 20:00
Control Mode ☾	Control Mode ☀	Control Mode ☾	Control Mode ☾
Setpoint ♨ 16°C	Setpoint ♨ 20°	Setpoint 16°C	Setpoint ♨ 16°C

Entering the Controls Parameter Screen:

Press ⚙ **and** 🌀 **for approximately 5sec until the commissioning screen appears.**

Note:

These Parameters can be only changed by HVAC professionals

Changing of the Commissioning Parameters

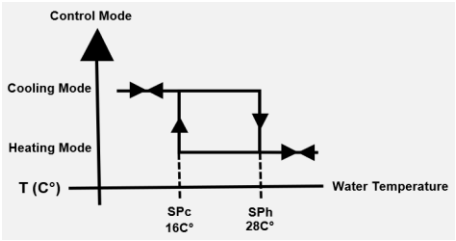
1 Press ⚙ until the desired Parameter number appears
2 Press ▲ or ▼ until the desired value appears
3 Press ⚙ to confirm the selected value

the program goes to the next Parameter until all parameters set

At the end of the parameter list, the return to the Standard Screen

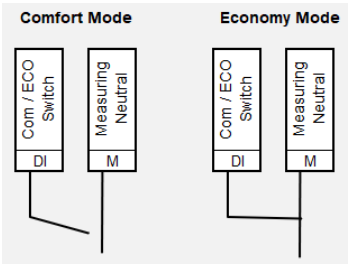
Press 🌀 *at any time of the setting process to leave the Commissioning screen*

Change / Over Sensor



Change Over Sensor
(Terminal SE - M)

Comfort / Economy Switch

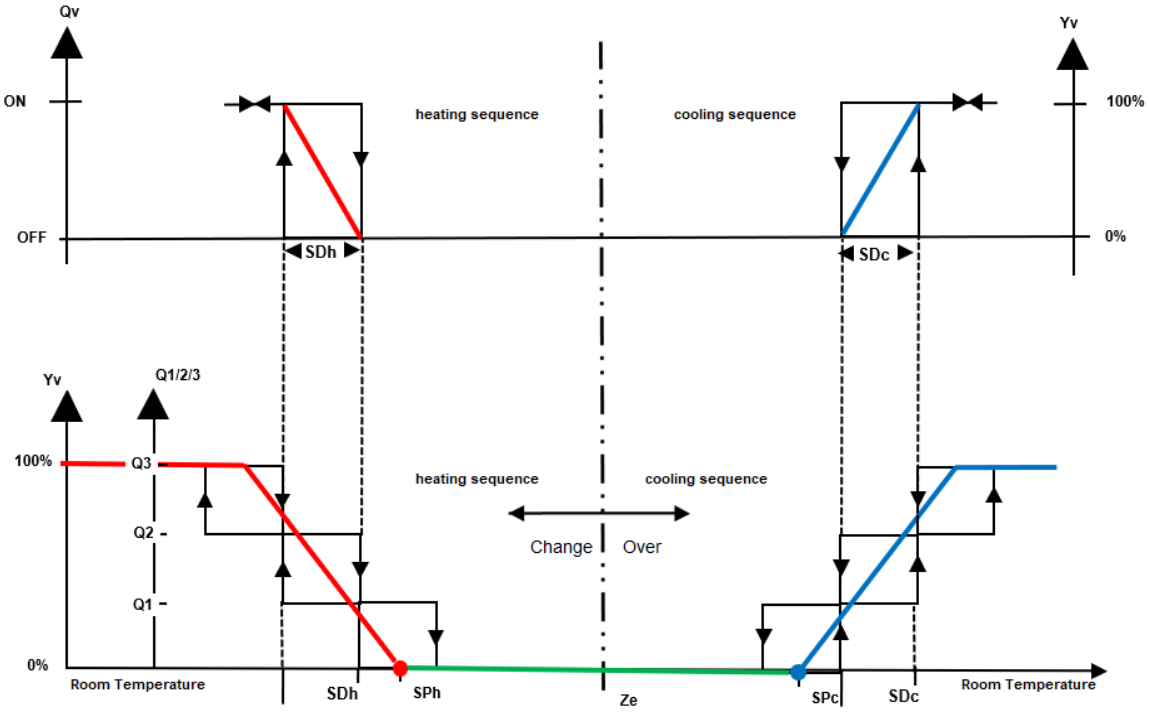


Comfort / Economy Switch
(Terminal DI - M)

Control Algorithm

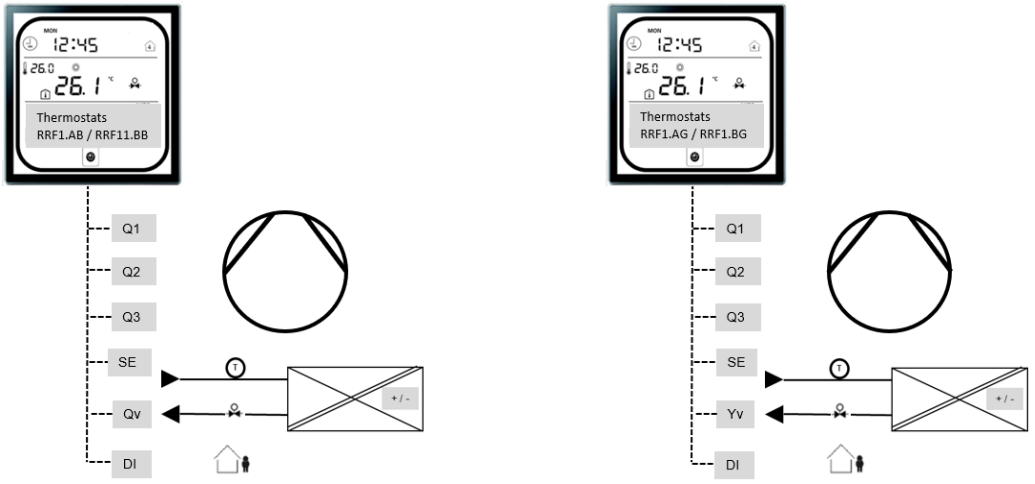
when heating only control mode is selected | **when cooling only control mode is selected**

when heating / cooling control mode is selected



Yv	Control valve output (%)	Q1/2/3	Fan speeds	SDc	Switch difference (RRF1.xB) / P-band cooling (RRF1.xG)	SPc	Actual Setpoint cooling
Qc	Control valve output (On/OFF)	Ze	Zero energy	SDh	Switch difference (RRF1.xB) / P-band heating (RRF1.xG)	SPh	Actual Setpoint heating

System Design



Q1 / Q2 /Q3	Fan Speed Outputs	Qv	heating/cooling valve output (ON/OFF)	DI	Comfort / Economy Switch
SE	Change Over Sensor	Yv	heating/cooling valve output (%)		

HVAC- Parameters

PARA	Name	Range	Description	Default Value
PO1	Forced Ventilation	0	Available Fan Stages 0-1-2-3	0
		1	Available Fan Stage 1-2-3	
PO2	Fan Stage Control	0	Manual and Auto Fan- Stages Control	0
		1	Only Automatic Fan Stage Control	
PO3	User Interface Button Configuration	0	all active	0
		1	Fan, Time/Date and Setpoint button inactive	
		2	Fan Stage button inactive	
		3	Setpoint button inactive	
PO4	Display configuration during the Back-Light is OFF	0	Com/Eco Mode button (50%)	2
		1	Com/Eco Mode button und Temperature (50%)	
		2	Com/Eco Mode button, Clock and Temperature (50%)	
		3	Standard Display	
PO5	Screen Saver active time	2…150sec.	Time after the last key stroke	120sec.
PO6	Displayed Temperature Unit	0	Degree Centigrade (°C)	0
		1	Degrees Fahrenheit (°F)	
PO7	Room Temperature Calibration	-3...+3k	Adjustment of room temperature sensor	0k
PO8	Setpoint Over Upper Limit	10…45°C	Change Over Setpoint Comfort Cooling	28°C
PO9	Setpoint Over Lower Limit	10…45°C	Change Over Setpoint Comfort Heating	18°C
P10	Comfort/Economy switch setpoint	5…40°C	Setpoint when in Heating Mode	6°C
P11	Time Format	1	European Time Format	1
		2	American Time Format	
P12	Date & Time display	1	no time schedule	1
		2	4 Schedules for 7 individual days	
		3	4 Schedules for all day identical	
P13	N.A.			
P14	Comfort/Economy switch Icon	1	displayed as Not Occupied Symbol	1
		2	displayed as Window Switch Symbol	
P15	Date & Time display	1	Displayed in Standard Screen	1
		2	Not displayed in Standard Screen	

Control Parameter, only for HVAC professionals

PARA	Name	Range	Description	Default Value
PP1	Controller Functionality	0	2-pipe Fan Coil, cooling only	0
		1	2-pipe Fan Coil, heating only	
		2	2-pipe Fan Coil, heating/cooling with manual C/O	
		3	2-pipe Fan Coil, heating/cooling with auto C/O	
PP2	Temperature Changeover heating	5...+45 °C / +41…113 °F	Changeover Temperature Setpoint heating	28 °C / 82 °F
PP3	Temperature Change Over cooling	5...+45 °C / +41…113 °F	Changeover Temperature Setpoint cooling	16 °C / 61 °F
PP4	Power Failure	0	last saved settings	1
		1	default settings	
PP5	Switching differential Heating (SDh)	0.5…4 K	applicable for SDh output or P-band	2 K
PP6	Switching differential Cooling (SDc)	0.5…4 K	applicable for SDc output or P-Band	1 K
PP7	Fan Stages ON-time	1…120 sec.	applicable for Q1, Q2, Q3 outputs	3 sec.
PP8	Fan Stages ON-time	1…120 sec.	applicable for Q1, Q2, Q3 outputs	3 sec.
PP9	Economy Setpoint Cooling	1...+50 °C / +34...99 °F	Economy Setpoint Cooling	28°C
PP10	Economy Setpoint Heating	1...+50 °C / +34...99 °F	Economy Setpoint Heating	16°C
PP11	Comfort Setpoint Cooling	1...+50 °C / +34...99 °F	Comfort Setpoint Cooling	22°C
PP12	Comfort Setpoint Heating	1...+50 °C / +34...99 °F	Comfort Setpoint Heating	20°C

Advices

Installation Notes

Caution

Observe the following general regulations for engineering and implementation:

All relevant national and heavy power regulations

Other country specific regulations

Country-specific regulations

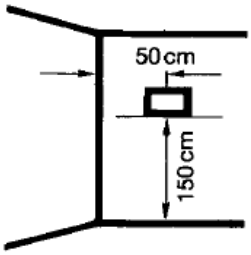
Local electrical supply authority regulations

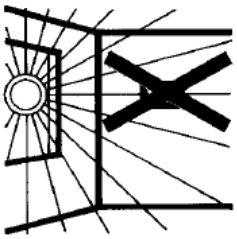
Schematics, cable listings, dispositions, specification and arrangements from the customer or engineering office in charge

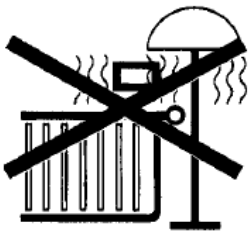
Third party specifications, e.g. general contractors or constructors

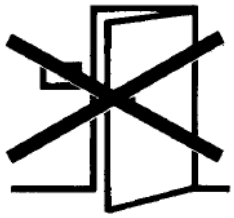
Mounting Advices

Caution









Disposal Notes

The device is considered an electronic device for disposal in terms of the EUROPEAN DIRECTIVE 2012/19/EU.

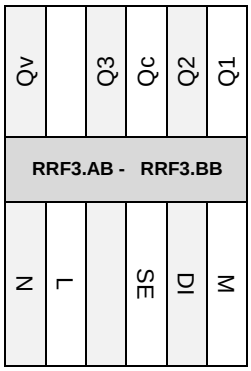
The device may not be disposed as domestic garbage.

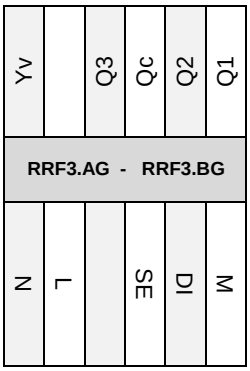
The device must be disposed through channels provided for this purpose.

It is mandatory to complying with local currently applying laws and regulations.

Connections

Terminal Connection





N - L	Operating Voltage AC 230 V
Q1	Control Output "Fan Speed 1" AC 230 V
Q2	Control Output "Fan Speed 2" AC 230 V
Q3	Control Output "Fan Speed 3" AC 230 V
Qc*	Control Output "Valve" AC 230 V
Yv**	Control Output 0…10V Valve
SE	Change Over Sensor
D1	Comfort / Economy Switch (normally open)
M	Measuring Neutral
*	Control output for RRF3.AB & RRF3.BB
**	Control output for RRF3.AG & RRF3.BG

Dimensional Drawing / Mounting Instruction